



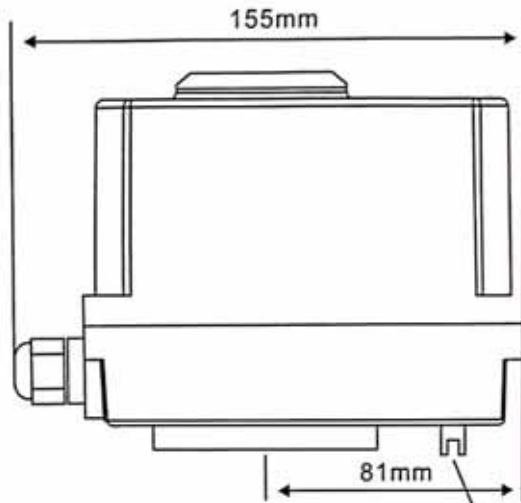
Product Description

PTAT series electric actuator is with unique design, It can be used to control the 0° -270° rotary valve or and other similar products, such as butterfly valve, ball valve, air valve, flapper valve, plug valve, louver valve, etc. It can be widely used in petroleum, chemical industry, water treatment, shipping, paper making, power station, heat supply, building automation, light industry and other areas. .With ac 380v/220v/110v driving power supply, the actuator can make the valve movement to the required position by 4-20 ma current signal or 0 to 10 v DC voltage controlling signal. The maximum output torque is 4000 N»M. An indisputable advantage that will impress you.

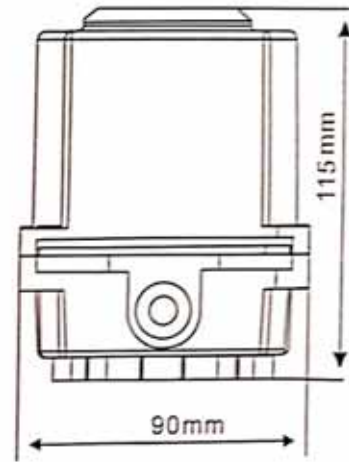
Performance characteristics

- With hard aluminum alloy material, the size of the housing is small. The housing is with strong corrosion resistance after anodizing treatment and polyester powder coating, the surface is fine and smooth, which can reduce electromagnetic interference.
- The fully enclosed squirrel cage motor is with futures as: small volume, large torque, small inertia force, F-class insulation and built-in overheat protection switch, which can prevent motor damage from over heating. Anti-corrosive and rustproof, all screws are of stainless steel material.
- With portable alien key, with which you can manually operate the actuator when power failure. On the surface of the actuator, there is a clamp to lay the alien key, so you can find it when you need it.
- The indicator is mounted on the central actuator to observe the valve position. It is designed with convex lens, the water will not accumulate, and it is more convenient to observe.
- With space heater, which will help to keep the inner components and parts in a dry condition even in raining and wet whether.
- With good sealing structure. The integrated design of worm gear and output shaft avoids the gap of key connection. It is with high transmission precision. With special copper alloy forging, which is with high strength and good abrasion resistance features.
- With both mechanical limit and electronic limit. The mechanical limit screw is adjustable, safe and reliable; The electronic limit switch is controlled by the cam mechanism. The simple adjustment mechanism can set the position accurately and conveniently, and it is not affected by over adjusting of the handwheel.
- The precision worm gear and worm mechanism can efficiently transmit large torque with higher efficiency, lower noise and longer working life. With self-locking function, to prevent reversal. The driving parts are more stable and reliable, no need to add lubrication.
- Protection design: when removing the shell, the bolt is attached to the shell and will not fall off.
- The mounting dimensions of the bottom meets the international standards of ISO5211 / DIN3337, With double square threaded hole to facilitate with square bar valve linear or 45° angle of installation, with strong adaptability. It can be installed either vertically or horizontally.
- The control circuit is with single-phase or three-phase power supply standard, The layout of the line is compact and reasonable, the external circuit is also simple, connection terminals for additional functions can be effectively added. Direct-current power supply is also available.
- Intelligent control: the intelligent control module is highly integrated into the body of the electric actuator, no need to connect with external positioner. Digital setting with high precision, self - diagnosis, multi-functions.
- Powerful functions: intelligent type, proportional type, switching type, all kinds of signal output types are available.

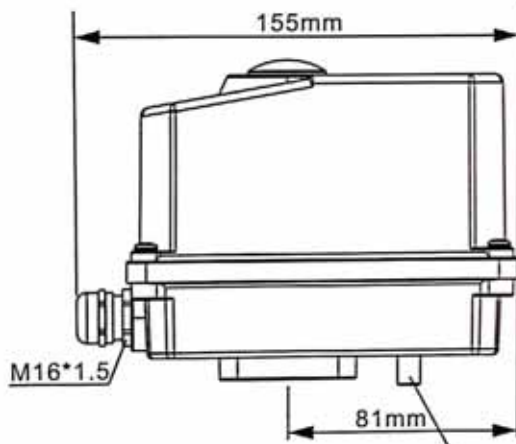
— external dimension



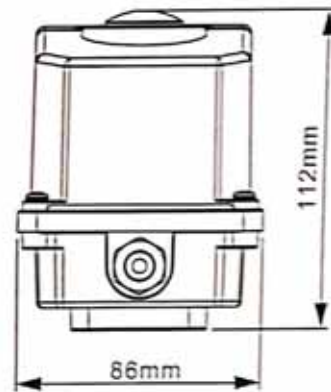
A
Type



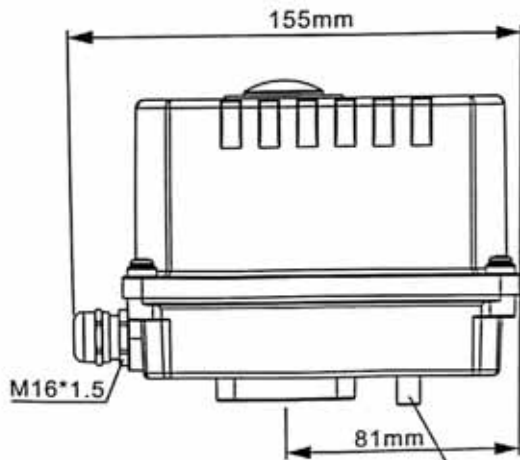
During manual debugging,
press inward with an Allen wrench



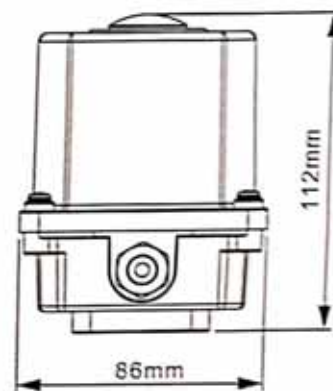
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During manual debugging,
press inward with an Allen wrench

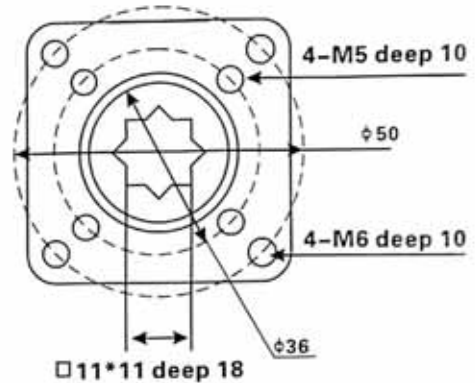
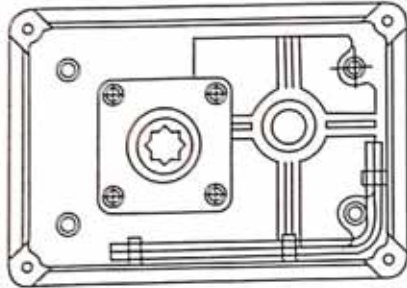


C
Type



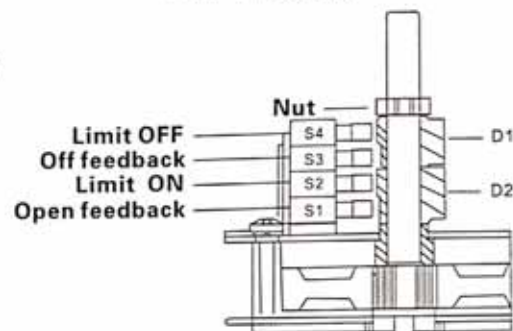
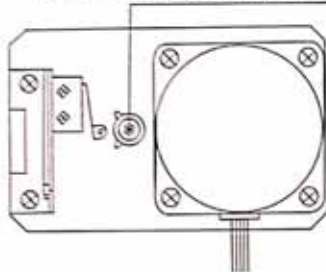
During manual debugging,
press inward with an Allen wrench

Installation dimension



Whole machine debugging

Loosen nuts during commissioning



Commissioning diagram (right is the enlarged commissioning diagram)

Adjustment of limit switch (electrical limit)

1. Use the handle to drive the valve to the fully open position, loosen the nut for one turn, turn the D2 yellow limit block anticlockwise to make it just to the switch limit, and after hearing "dada" twice, the opening is completed.
2. Use the handle to drive the valve to the fully closed position, turn the D1 red limit block clockwise to make it just touch the switch limit, hear "dada" twice, and then complete the locking nut.

Electrical parameters and wiring diagram

Power supply voltage: ac22v / DC24V / 50Hz

Rated power: AC 20W / DC 2W

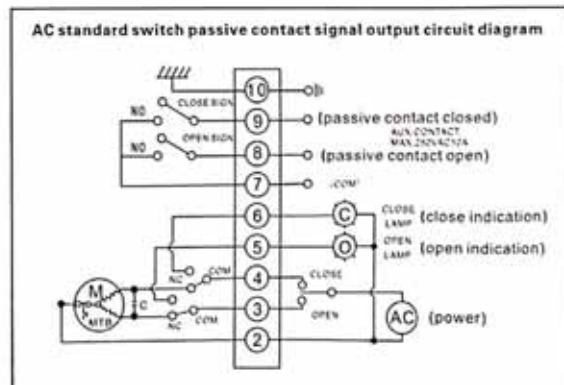
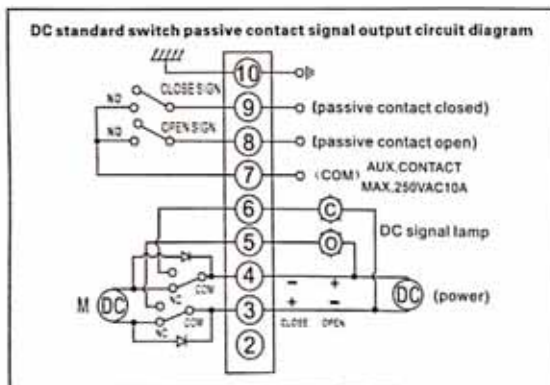
Rated current: AC 0.2a/dc 0.15A

Output torque: 30n. M

Action time: 5-15s

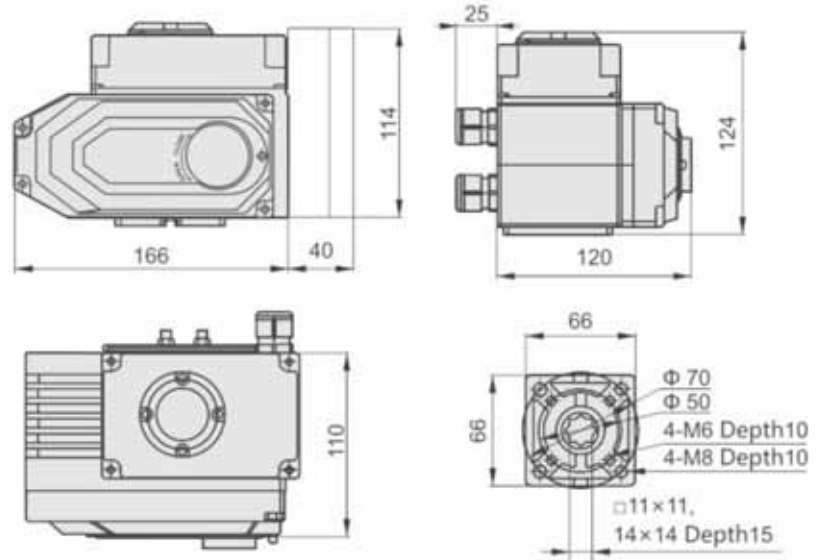
Rotation angle: 0-90 °

Protection grade: p67



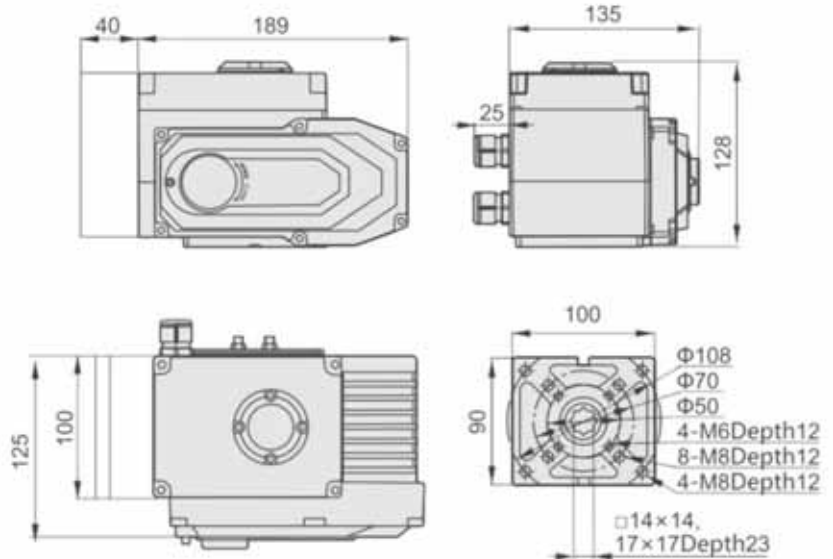
Dimensions and performance parameters

PTAT-05 Series Dimensions and Performance Parameters



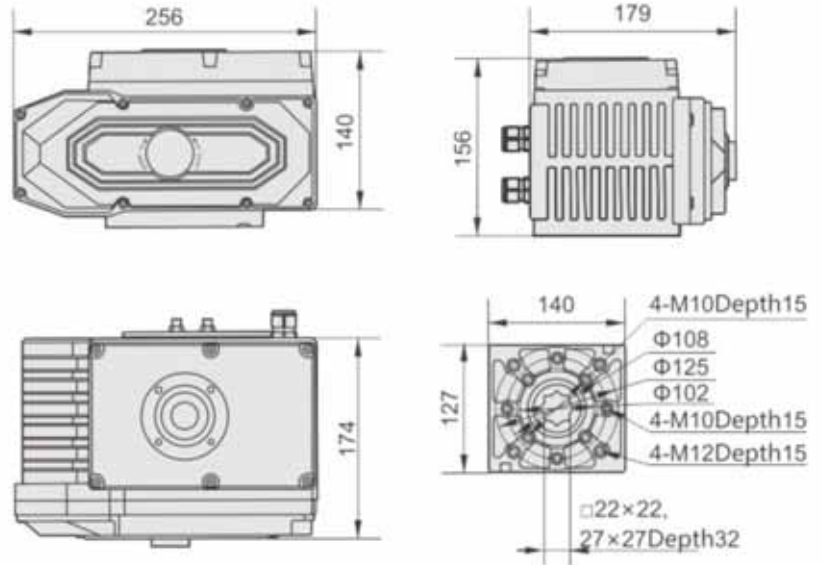
Model Name	PTAT-05				
Input Voltage	DC24V	AC24V	AC110V	AC220V	AC380V
Motor Power	15W				
Rated Current	2A	2.2A	0.48A	0.15A	0.1A
Output Torque	50NM	15NM/30NM/50NM			
Operating Time	15S	10S/20S/30S			
Output Shaft	Square hole: 11*11/14*14, Depth: 15/18; Round hole: Φ12.6, Depth:26				
Control Circuit	B-type/S-type/R-type/H-type/A-type/K-type/D-type/T-type				
Operation Angle	0-270°				
Weight	3.5kg				
Dielectric Strength	1500VAC/Minute				
Insulation Resistance	100MΩ/500VDC				
Working Temperature	-25°C-60°C (Other temperature can be customized)				
Installation Angle	360° Any Angle				
Housing	Aluminium Alloy Die-castings, IP67 water-proof grade, NEMA4 and 6				
Optional Function	Over torque Protection, Heat Dehumidifier				
Ball Valve	15-32				
Butterfly Valve	50-80				

PTAT-10 Series Dimensions and Performance Parameters



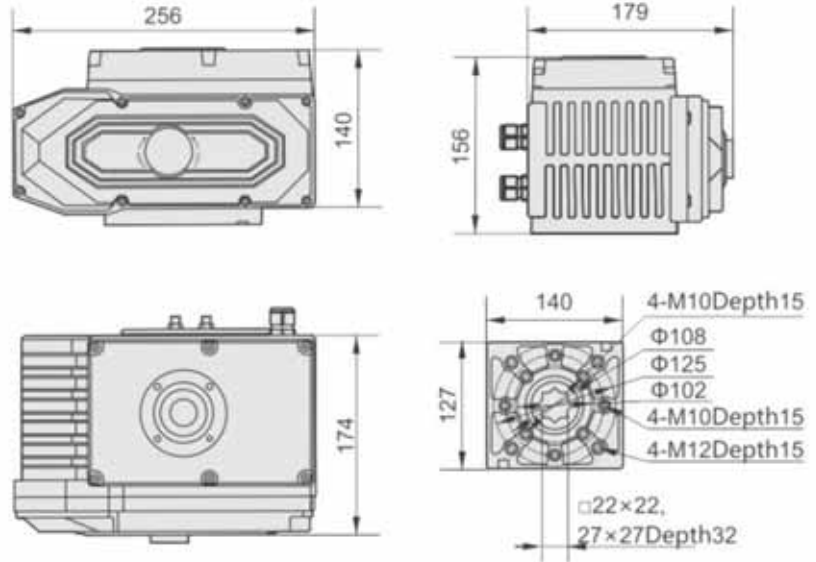
Model Name	PTAT-10				
Input Voltage	DC24V	AC24V	AC110V	AC220V	AC380V
Motor Power	30W				
Rated Current	2.4A	3.0A	0.64A	0.28A	0.19A
Output Torque	100NM	50NM/60NM/100NM			
Operating Time	10S	5S/30S/40S			
Output Shaft	Square hole: 14*14/17*17, Depth: 18/32; Round hole: $\Phi 15.7/\Phi 18.95$, Depth: 28				
Control Circuit	B-type/S-type/R-type/H-type/A-type/K-type/D-type/T-type				
Operation Angle	0-270°				
Weight	4.7kg				
Dielectric Strength	1500VAC/Minute				
Insulation Resistance	100M Ω /500VDC				
Working Temperature	-25°C-60°C (Other temperature can be customized)				
Installation Angle	360° Any Angle				
Housing	Aluminium Alloy Die-castings, IP67 water-proof grade, NEMA4 and 6				
Optional Function	Over torque Protection, Heat Dehumidifier				
Ball Valve	15-65				
Butterfly Valve	50-100				

PTAT-20/50 Series Dimensions and Performance Parameters



Model Name	PTAT-20					PTAT-50			
	Input Voltage	DC24V	AC24V	AC110V	AC220V	AC380V	AC24V	AC110V	AC220V
Motor Power	70W					118W			
Rated Current	4.0A	5A	0.9A	0.6A	0.25A	8.0A	2A	0.92A	0.45A
Output Torque	200NM	80NM/100NM/150NM/200NM				150NM/250NM/300NM/500NM			
Operating Time	10S	5S/15S/30S/60S				5S/15S/30S/60S			
Output Shaft	Square hole: 22*22/27*27, Depth: 32; Round hole: $\Phi 28.5/\Phi 32.65$ Depth: 42Max								
Control Circuit	B-type/S-type/R-type/H-type/A-type/K-type/D-type/T-type								
Operation Angle	0~270°								
Weight	10kg					10.5kg			
Dielectric Strength	1500VAC/Minute								
Insulation Resistance	100M Ω /500VDC								
Working Temperature	-25°C~60°C (Other temperature can be customized)								
Installation Angle	360° Any Angle								
Housing	Aluminium Alloy Die-castings, IP67 water-proof grade, NEMA4 and 6								
Optional Function	Over torque Protection, Heat Dehumidifier								
Ball Valve	80					100			
Butterfly Valve	200					250			

PTAT-100/200 Series Dimensions and Performance Parameters



Model Name	PTAT-100				PTAT-200			
	Input Voltage	AC24V	AC110V	AC220V	AC380V	AC24V	AC110V	AC220V
Motor Power	118W				140W			
Rated Current	8.5A	2.1A	1A	0.48A	9A	2.2A	1.1A	0.6A
Output Torque	1000NM				2000NM			
Operating Time	30S/50S				90S			
Output Shaft	Square hole: 22*22/27*27, Depth: 32; Round hole: Φ28.5/Φ32.65 Depth: 42Max							
Control Circuit	B-type/S-type/R-type/H-type/A-type/K-type/D-type/T-type							
Operation Angle	0~270°							
Weight	10.5kg							
Dielectric Strength	1500VAC/Minute							
Insulation Resistance	100MΩ/500VDC							
Working Temperature	-25°C~60°C (Other temperature can be customized)							
Installation Angle	360° Any Angle							
Housing	Aluminium Alloy Die-castings, IP67 water-proof grade, NEMA4 and 6							
Optional Function	Over torque Protection, Heat Dehumidifier							
Ball Valve	125				150			
Butterfly Valve	300-350				400-450			

1. SUMMARY

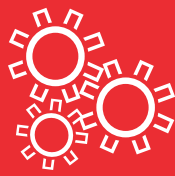
Electric actuator is used for control 0°-270° rotation of the valves and other similar products. Such as butterfly valve, ball, valves, cock etc. Its widely used in petroleum, chemical, water treatment, shipping, paper making, power plants, heating, light industry and other industries. It drives by 380V/220V/110V AC power, control signal is 4-20mA current signal or 0-10V DC voltage signal, so the valve can be moved to the desired location to achieve automatic control. The maximum output torque is 4000N.M.

2 Performance Features

- 2.1 Shell :** The shell is made of aluminium alloy ,with anodize oxidation treatment and polyester powder coating . It is strong corrosion-resistant and enclosure IP67 ,NEMA 4 and 6 ,IP68 is optional .
- 2.2 Electric Machinery Motor :** Fully enclosed squirrel-cage asynchronous motor , small , large torque , and small inertia force , F-class insulation rating , with thermal protection to avoid damaging .
- 2.3 Manual Structure Manual Structure:** The design of handle is safe ,reliable ,labor-saving ,small .If power failure , operated by handle .
- 2.4 Indicator:** Install indicator in the center shaft and adopts convex mirror design ,no cumulate water , more convenient to observe .
- 2.5 Space Heater Space heater:** It is used for controlling temperature to avoid condensing internal of housing and keep dry .
- 2.6 Sealing :** Sealing Well sealing performance and enclosure IP67 ,IP68 is optional .
- 2.7 Limit switch:** Limit switch- Mechanical limit stoppers are adjustable ,safe and reliable ;and not affected by excessive handle .
- 2.8 Self-locking :** Self-locking - Accurate worm and worm gear transfer large torque efficiently ,high efficiency ,low noise (Max .50dB) long life , stable and reliable transmission parts ,no need to refuel
- 2.9 Anti-off bolt:** Anti-off bolt--the bolt attached to the shell and be not off when remove the shell.
- 2.10 Installation:** The installation size meets international standard ISO5211/DIN3337. The holes are double square so that it's easy to fix the linear or 45 corner valves attached square bar adapt able , it can be installed vertically and also can be installed level.
- 2.11 Circuitry:** Controlling circuit meets the single-phase or three-phase power supply standard , circuit layout is reasonable and compact , terminals meet various of additional functional requirements effectively.

3. Performance Parameters

Model	Max output torque	Operating time 90°		Output axis	Electrical Machinery	Rated current 50/60HZ			Net Weight
	N.M	Special (S)	Standard (S)	MM	W	AC 220V/A	AC 380V/A	DC 24V/A	kg
003	30	5/10	15	11x11	20	0.10	0.05	0.2	1.4
005	50	5/15	30	14x14 Φ13-5	15	0.15	0.1	2.0	3.5
010	100	15/30/60	30	17x17 Φ16-5	30	0.28	0.19	2.5	4.7
015	150	15/30/60	40	17x17 Φ19-5	50	0.50	0.22	5.0	5.0
020	200	5/15/90	40	22x22Φ22.5-5	70	0.60	0.25	8.5	10.0
050	400	5/15/90	40	22x22Φ28.5-8	118	1.00	0.50	8.50	10.5
100	1000	5/15/40	60	27x27 Φ32-8	118	1.00	0.50	9.00	11.0
200	2000	5/15/40	60	27x27	140	1.10	0.60	10.00	11.5

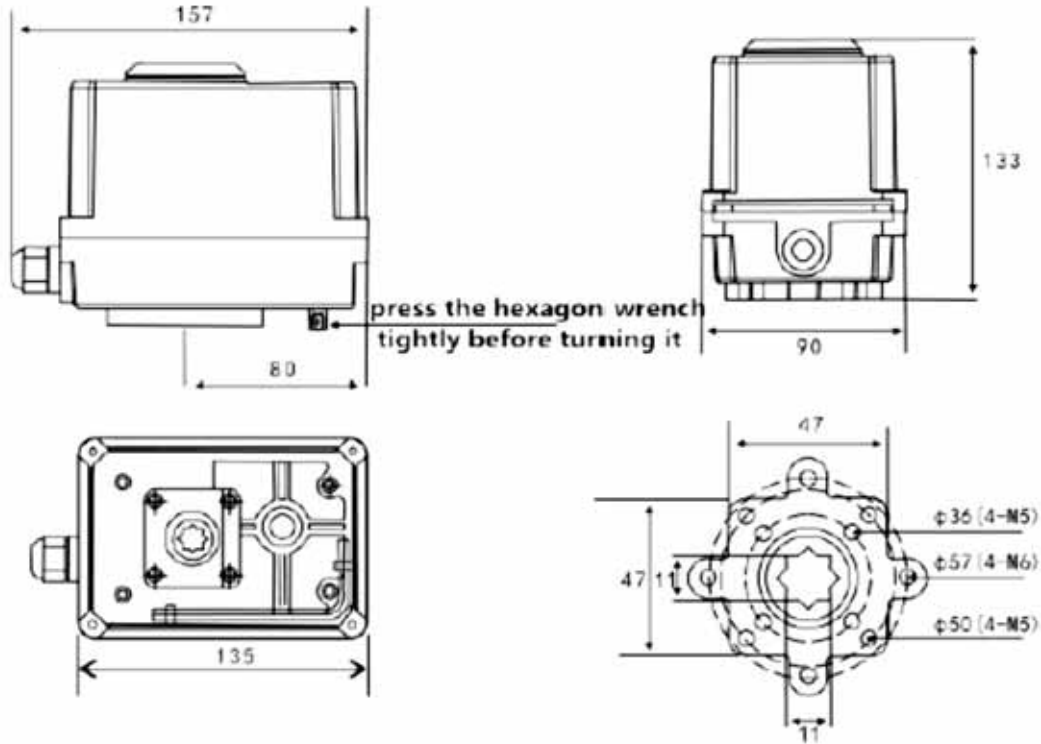


4. Standard Technical Parameters

Shell	Aluminum alloy shell,waterproof level:IP67, NENA4and6	Model 003 ABS material
Power supply	110/220VAC 1Phase, 380/440VAC 3 Phase, 50/60Hz,±10%	
Control supply	110/220VAC 1Phase, 50/60Hz,±10%	
Electric machinery	Squirrel-cage asynchronous electric motor	Model 03 for Permanent magnet synchronous motor
Limit switch	2x ON/OFF,SPDT,250C AC 10A	
Accessory Limit switch	2x ON/OFF,SPDT,250C AC 10A	
Stroke	90°~270±10° When it's over 90°please inform in advance	0°~270°
Speed protection/ Operating temperature	Inside hot protection , On 120℃±5℃/off 97℃±15℃	
Indicator	Continuous situation indication	
Manual operation	Mechanical handle (Optional: fixing with the hand-wheel)	
Self-locking device	Provide self-locking by worm and worm g ear	
Mechanical limit	2 pieces of adjustable bolts	
Space heater	Condensation preventing 7-10w(110/220V)A C	
Bonding hole	2 pieces M18X1.5	
Ambient temperature	-20℃~+70℃	
Lubrication	Aluminium base grease(Ep)	
Material	Steel,aluminium alloy, aluminium bronze,	
Ambient humidity	Max 90% RH	
Seismic performance	XYZ10g, 0.2-34Hz,30 minutes	
External coating	Dry powder, epoxy polyester	Non-condensed

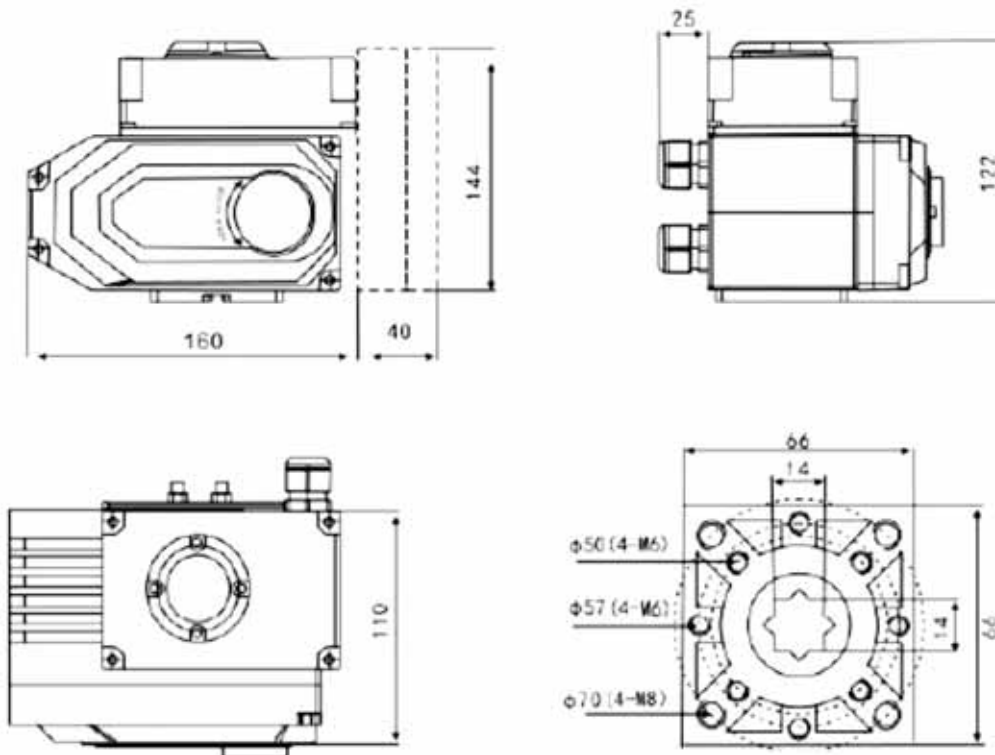
5. Overall Dimensions

5.1 PTAT-03 appearance and installation dimension

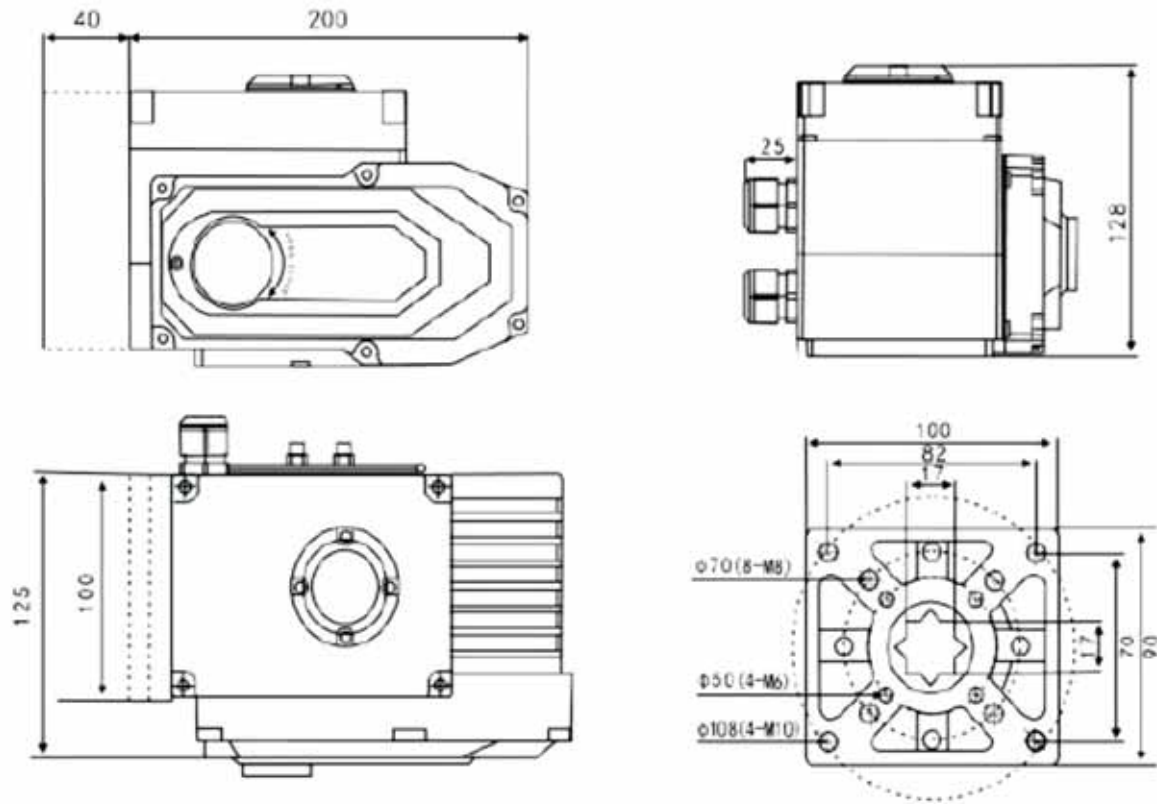


P:1

5.2 PTAT-05 appearance and installation dimension (The part of dotted line is used for analog quantity control box. On- off model do not have this size)

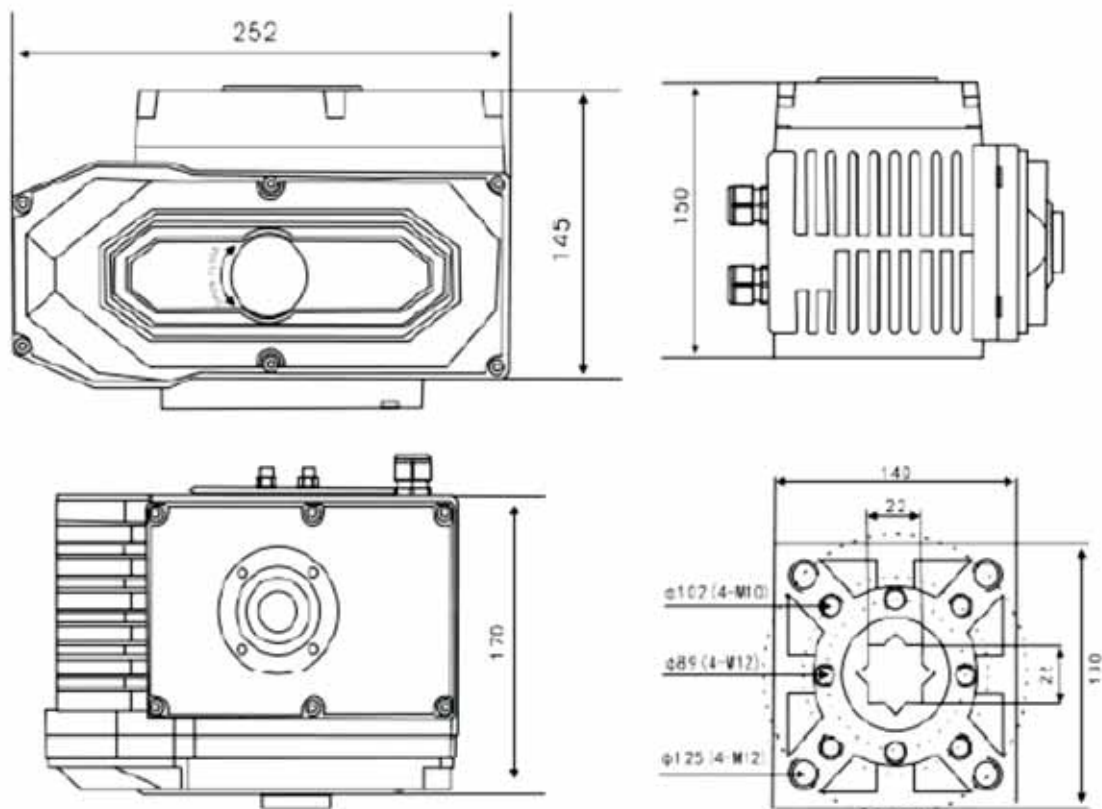


5.3 PTAT-10 & PTAT-15 appearance and installation dimension (The part of dotted line is used for analog quantity control box. On- off model do not have this size)

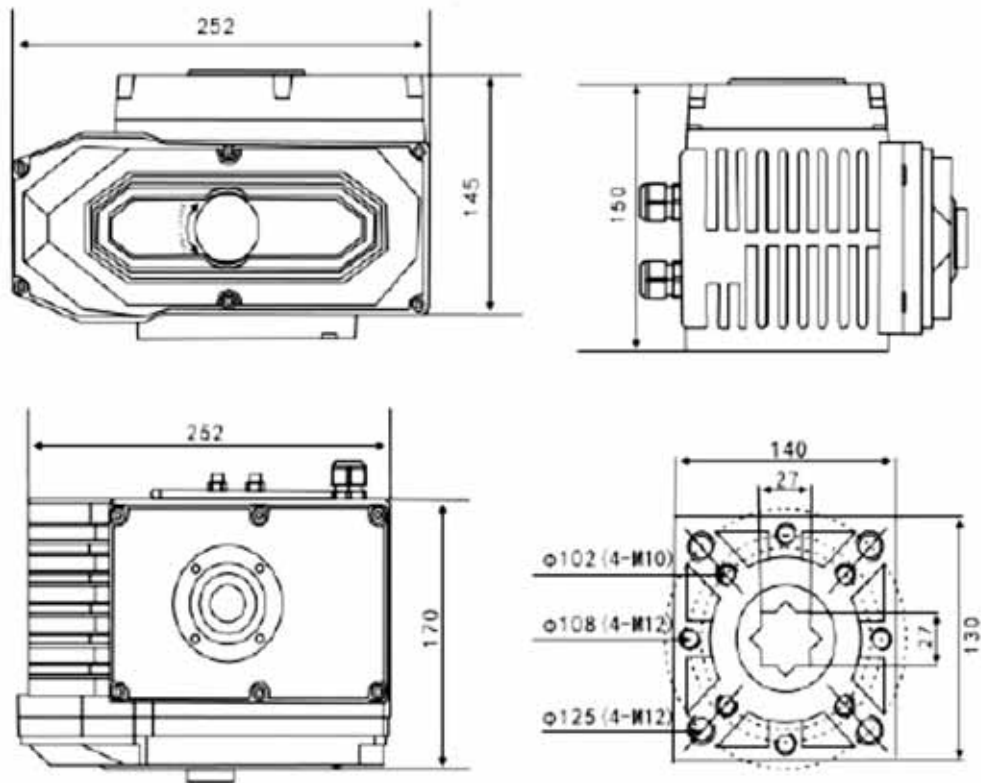


P:3

5.4 PTAT-20 & PTAT-50 appearance and installation dimension



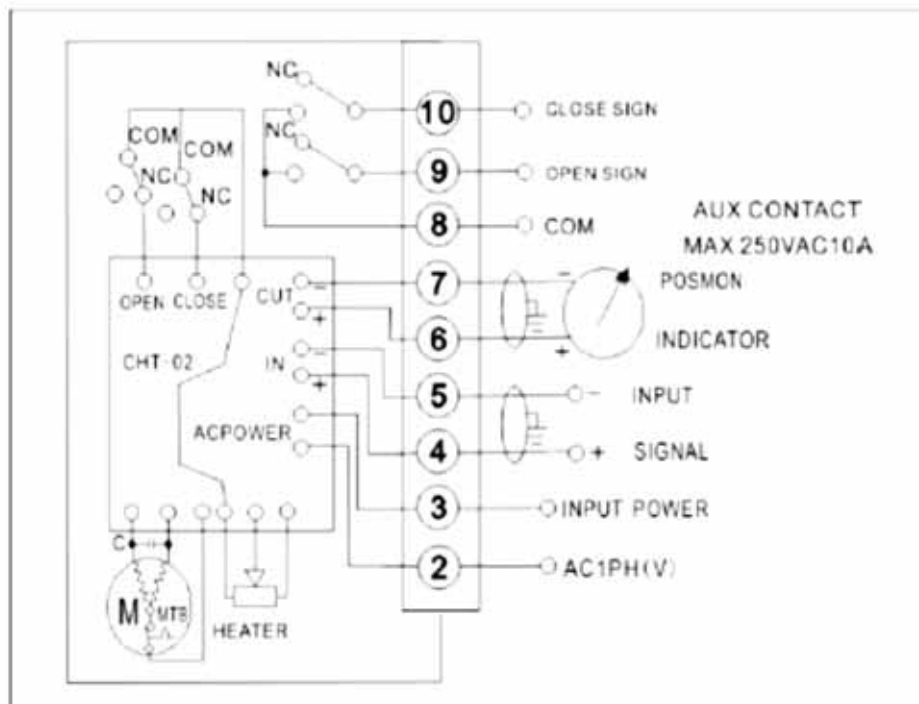
5.5 PTAT-100 & PTAT-200 appearance and installation dimension



P:5

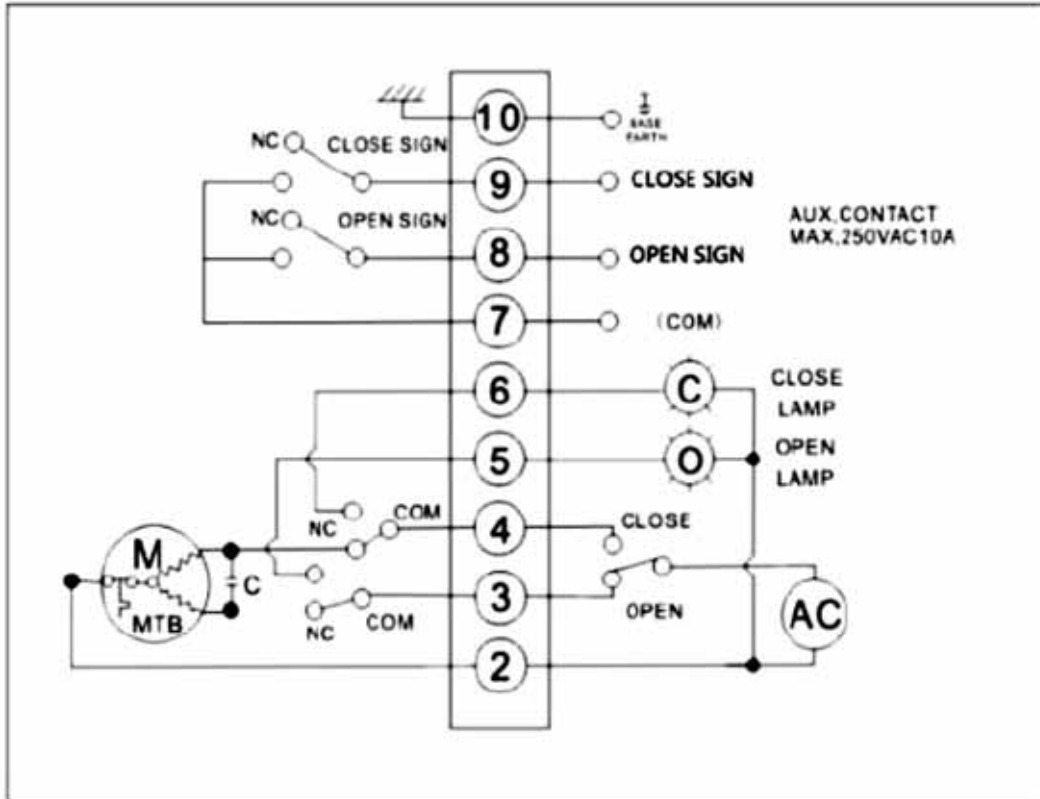
6. Circuit Diagram

6.1 Analog quantity 4-20mA, 0-10V passive contact signal output circuitry



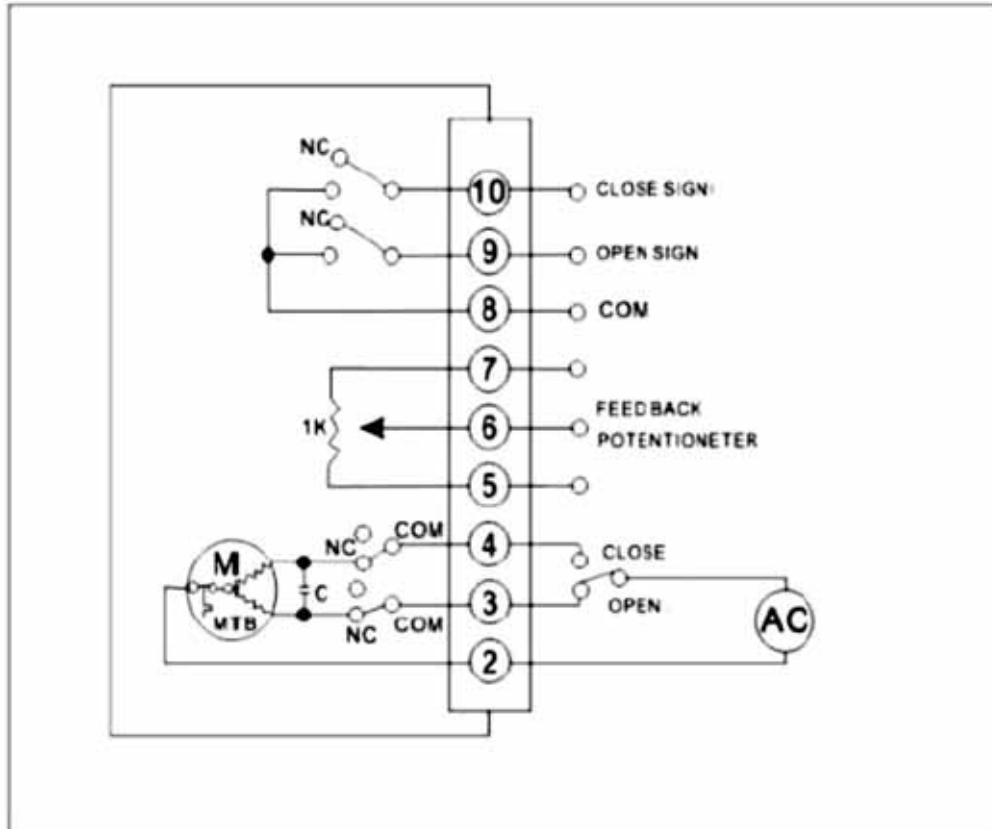
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6.2 Standard on-off passive contact signal output circuitry



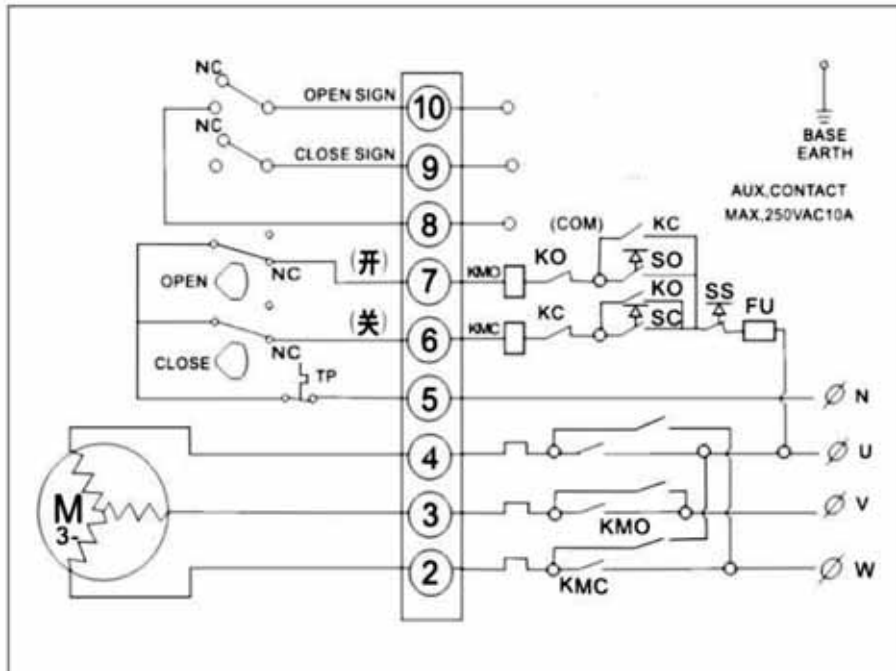
P:7

6.3 Angle and passive contact signal output circuitry.



P:8

6.4 Three phase passive contact (Outer control on -off model)



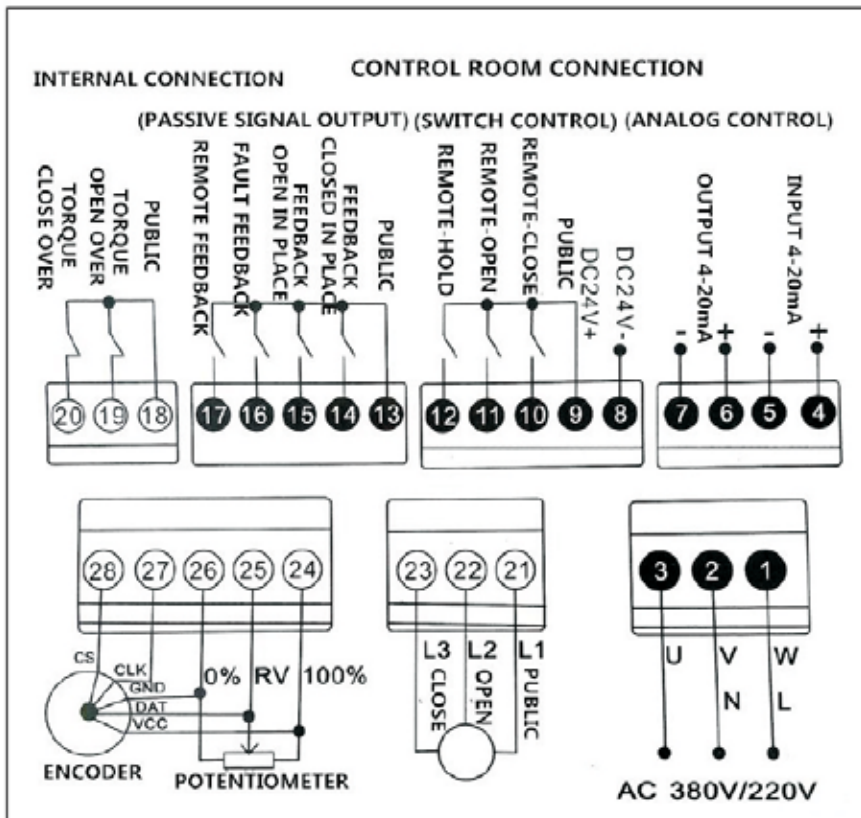
P:9

Note: When connecting, the valve should be in the semi open and closed position. Pay attention to the order of the phase line to ensure that the travel switch can be positive to control the valve for opening and closing, See picture 15, using a small screwdriver in time to press the corresponding limit switch. If it out of control , change the phase line position, otherwise it will damage the actuator.

Wiring instructions :

- 1.Terminal 2.3.4 is connected with three-phase alternating current, and the positive and negative rotation of the motor is realized by the external phase inversion circuit;
- 2.Terminal 5 is the common point of the external control circuit;
3. Terminal 6 is "open" operation control;
- 4.Terminal 7 is "off" operation control;
5. Terminal 8 is the common end of passive contacts;
6. When the "open" operation is in place, terminal 9 is "fully open";
7. " Place off" operation, terminal 10 is " off signal".

6.5 Wiring method and diagram

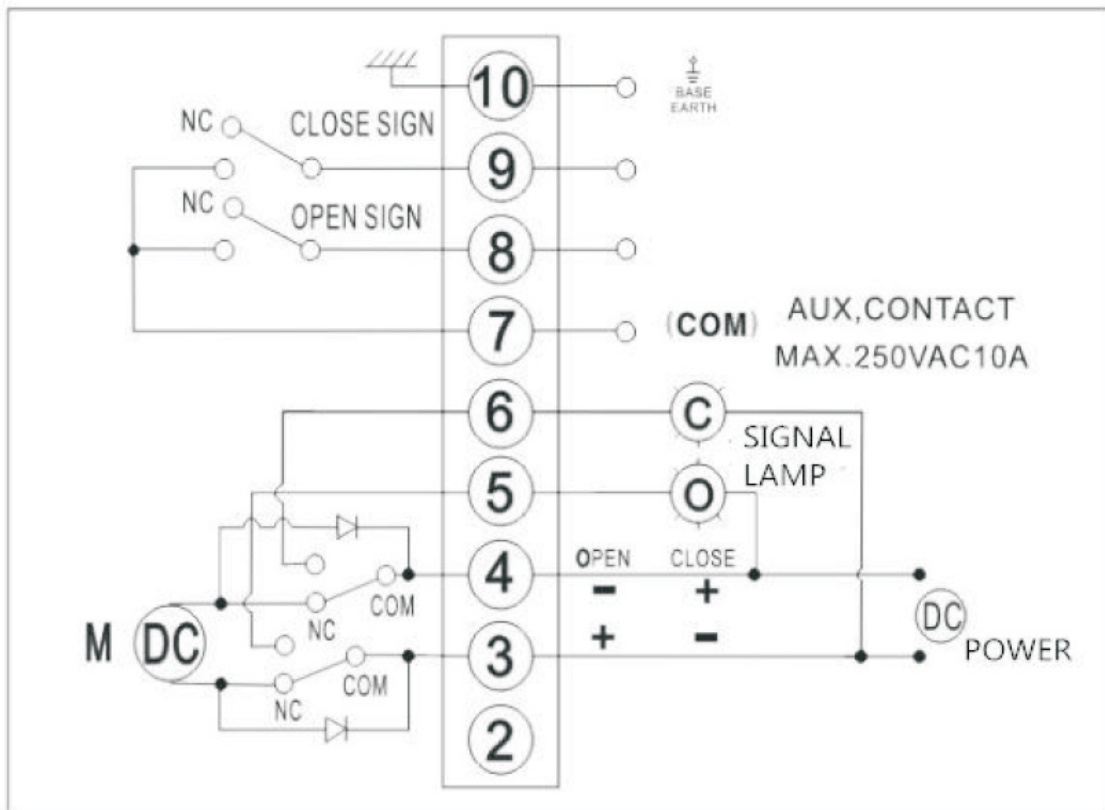


P:10

Note:

1. through the parameters of the P=9. 1 into the IP free choice for the regulation of the switch or the amount of one of its working mode, but can not be used simultaneously Section type and switch type (5 kinds of switch type control mode), factory default value for ip=0 or switch type ip=1, please refer to the remote control signal setting.
2. open and close the torque port need to connect the switch type with normally closed limit switch, factory default value of Md=2, when not using this function, Can modify the Md=1 parameters through the P=9.5 shield this port function, please refer to the "actuator wiring type settings".
3. the common end of the switch control is DC24V+, the voltage is provided by this module, without access to external power supply.
4. the product can be connected potentiometer or encoder, please refer to the "valve sampling selection".

6.6 DC standard on-off passive contact signal output circuitry



P:11

7. Structure

Electric actuator is made up of the following parts

- Shell: including shell and pedestal
- ? Drive part: full sealing high - performance squirrel-cage motor for the power source
- ? Driving mechanism: worm gear drive part
- ? Ratio control parts : Separation from the mechanical part, easy to debug
- ? Limit switch part
- ? Opening detected and feedback parts

8. Installation of Electric Actuator

8.1 Installation Sites

8.1.1 Indoor installation precautions

- It is not an explosion-proof product, so that please don't install in the place of explosive gases
- ? Please explain in advance if install in flooded and outdoor areas. Please reserve wiring, manual operation and other maintenance space

8.1.2 Notes of Outdoor installation

- ? In order to avoid rain, direct sunlight and other issues, it's need to install a protective cover, or use the grade IP68
- Please reserve space for repairing cables manual operation

8.2 The condition of Ambient temperature, and Fluid temperature

8.2.1 Ambient temperature

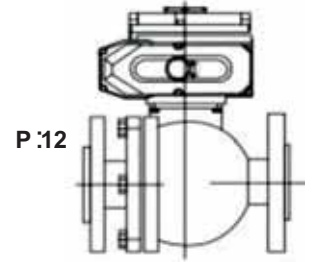
- ? Ambient temperature at -30°C - +60°C
- ? When the ambient temperature is below zero, add dehumidification heater in the machine

8.2.2 Fluid temperature

- ? When used with the valve, the heat of the fluid will be transmitted to the body and the temperature of the body will rise up 8.2.3. When the fluid temperature is high, the bracket connected with the valve needs special treatment.
- ? Standard bracket: Fluid temperature below +65 °C, using standard bracket or not use
- ? Medium Temperature Bracket: Fluid temperature is over +65 °C, use Medium Temperature Bracket
- ? High Temperature bracket: Fluid temperature is over +180 °C, use high temperature Bracket

8.3 Connect with the valve

- Manually turn the valve, confirm there is no abnormal condition and turn it to the fully closed position
- Fix the bracket on the valve
- Put the electric actuator on the bracket and screw it gently with bolts and nuts
- Turn the electric actuator to the closing position and fix the valve core shaft and the electric actuator output shaft with the coupling and screw
- Screw on the bolts between the electric actuator and the bracket
- Use the handle to rotate the electric mechanism, make sure no eccentricity, bending, smooth movement, pay attention not to overtravel



Note: Decrease hysteresis of the coupling as far as possible

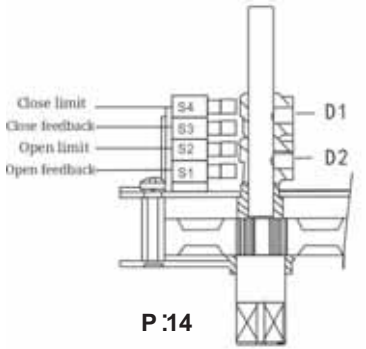
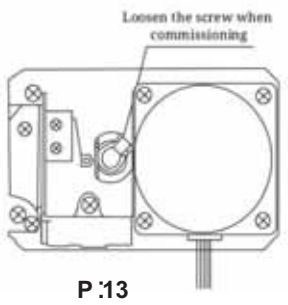
When installing, take care to match the actuator switch with the valve switch. The flange at the bottom of the actuator complies with the S05211 standard.

If the connected valve also meets this standard, it can be easily connected; if not, additional bracket connection is required.

9. Debug Description

9.1 Model 03 adjustment of stroke limit (P:13/P:14)

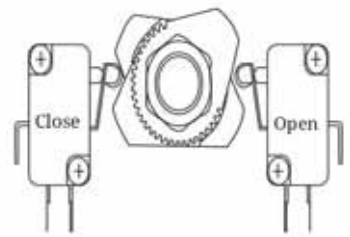
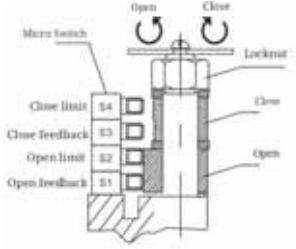
1. Use the handle to drive the valve to the fully open position, loosen the fixing screw of the D2 yellow limit block, rotate the D2 counterclockwise so that it is exactly to the full open limit position, after hearing two beeps, then fix the screws.
2. Use the handle to drive to the fully-closed position to loosen the fixed bolt on D1. Turn D1 clockwise until it reaches the fully-closed limit. After hearing two beeps, then fix the screws.



9.2 Model 05-200 adjustment of stroke limit (P:15/P:16)

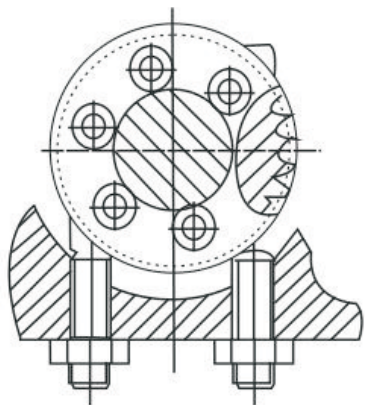
Turn the handwheel to move the actuator to the fully closed position of the valve.

Then use a wrench to loosen the limit cam fixing nut. Turn the limit cam (yellow on, red off) to adjust it to just press the lower limit switch (CLS). Position, then fix the limit cam nut, so set the position of the travel limit when the actuator is fully closed. The position of full open is set in the same way.



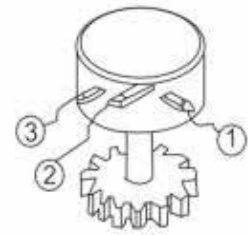
9.3 Adjustment of mechanical limit (P:17)

Loosen the lock nut of the mechanical limit screw and manually move the actuator to the fully closed position. Set the rotation limit nut, when it hits the fan gear inside, stop rotating and spin two circles. Finally tighten the nut, this sets the position of the mechanical limit when the actuator is fully closed. Full open position can be set in the same way, as shown in picture 17

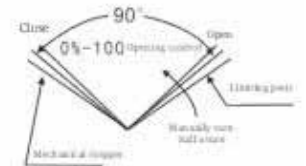


9.4 Adjustment of Potentiometer (P :18)

The potentiometer is output as a feedback signal in the actuator and has three output terminals. No. ① connect with slide arm of potentiometer (refer to picture 18),No. ② connect with the terminal, which resistance between slide arms constantly decrease, when the actuator is opening action, No. ③ connect with the terminal, which resistance between slide arms constantly increase, when the actuator is closed action.(Note: the potentiometer resistance should be not over-zero, jump phenomenon)Rotating the valve to the wide-open position by handle, as per open to limit switch closed action, measured with a multimeter to adjust the resistance between ② and ③ side to 35Ω - 60Ω , if not correct, can be adjust by turning the potentiometer drive gear of potentiometer



P:18



10. Running Test

10.1 Manual operation(P:19)

When manual operation is carried out, the power must be cut off first, the rubber cap of the deceleration cap must be removed, the attached handle should be inserted into the hexagonal hole, and the manual handle should be rotated clockwise to reduce the opening degree

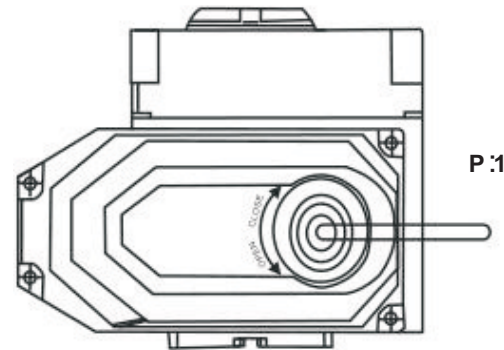
Note: when the opening degree turns to the fully open and fully closed position, the limit switch will rotate another half turn.It will hit the mechanical block, and excessive rotation will lead to damage to other parts, so avoid excessive force.

10.2 Electric operation

- Before electric operation, manually check whether the opening meter and valve Angle (full open and full close) are consistent . Check whether the wiring is correct, and at the same time , use an external switch to confirm the opening and closing action .
- After confirming the above state ,start electric operation

Note :

- Check wiring diagram ,power supply ,input /output signal correct
- Don't change the internal wiring
- If the power supply is 3phase ,it should be checking the rotation direction
- Manually put the actuator in half-open/off position ,power on and input the open signal
- If the electric actuator runs to the open position it means the wiring is correct
- If the running direction is opposite ,it must be change 2 pieces wiring in 3 pieces wiring



P:19

11. Maintenance

Oiling :Special tantalum base grease with long service life and good pressure resistance ,so it is needn't to refueling

Regular operation :when the valve works less ,the machine can be driven regularly to check whether there is any abnormal situation .

Note :Please refer to the instructions of the actuator control module part for the analog adjustment type debugging instructions .

12. Personalized functions of Electric Actuators

- The full opening and closing time of the valve is 2.8s-8s (optional) for some quick operation conditions
- Working under the water in short time ,it's used for working situation which the electric actuator is immersed in the water sometimes
- ? The valve move fully-open or fully closed slowly ,the actuator is enable to rotating the valve 90° achieve 650s
- ? Manual operation can be used with clutch hand rotation mechanism
- ? It's provided with the scene ,local/remote switching function
- It's provided with DC12V ,DC24V ,DC110V ,DC220V ,AC24V ,AC110V AC380V

Note : other unknown or special specifications ,please contact with Technology Department of our company